Exploring Students Cognitive Structures In Learning

This book is a compilation of papers from the inaugural International Science Education Conference held at the National Institute of Education (Singapore). The title, Science Education at the Nexus of Theory and Practice, reflects a pressing yet ongoing concern worldwide to integrate theory and practice in science education and the reader will find something of interest to both science education practitioners and researchers.

This conference proceedings focuses on enabling science and mathematics practitioners and citizens to respond to the pressing challenges of global competitiveness and sustainable development by transforming research and teaching of science and mathematics. The proceedings consist of 82 papers presented at the Science and Mathematics International Conference (SMIC) 2018, organised by the Faculty of Mathematics and Natural Sciences, Universitas Negeri Jakarta, Indonesia. The proceedings are organised in four parts: Science, Science Education, Mathematics, and Mathematics Education. The papers contribute to our understanding of important contemporary issues in science, especially nanotechnology, materials and environmental science; science education, in particular, environmental sustainability, STEM and STEAM education, 21st century skills, technology education, and green chemistry; and mathematics and its application in statistics, computer science, and mathematics education.

This book provides tips to teachers for moving toward active learning by using simulation and gaming. The book is a rare reference for teachers who wish to initiate active learning by applying many real experiences from world experts in simulation and gaming. This cumulative wisdom comes from cutting-edge trials reported at the 49th International Simulation and Gaming Association’s annual conference in Thailand 9–13 July 2018. The importance of changing teachers’ one-way lecture approach to that of active learning has been commonly understood for several decades and has been promoted especially in recent years in Asian universities. Simulation and gaming meets the requirements of such teaching programs, especially for active learning, but there are few books or references on how to gamify a lecture. This book serves as a guide to facilitate that change. The author recognizes the duty to provide readers with fixed directions toward simulation and gaming in the next generation, which have still not been fully elucidated. Developing a simulation and gaming culture and making it sustainable in the next decade are the purpose of this book.

It's one of the great mysteries of teaching: Why do some students "get it" and some students don't? In this book, Betty K. Garner focuses on why students struggle and what teachers can do to help them become self-directed learners. Difficulty reading, remembering, paying attention, or following directions are not the reasons students fail but symptoms of the true problem: underdeveloped cognitive structures—the mental processes necessary to connect new information with prior knowledge; organize information into patterns and relationships; formulate rules that make information processing automatic, fast, and predictable; and abstract generalizable principles that allow them to transfer and apply learning. Each chapter focuses on a key cognitive structure and uses real-life accounts to illustrate how learners construct meaning by using recognition, memorization, conservation of constancy, classification, spatial orientation, temporal orientation, and metaphorical thinking. The author's simple techniques stress reflective awareness and visualization. It's by helping students to be conscious of what their senses are telling them, encouraging them to visualize the information for processing, and then prompting them to ask questions and figure out solutions on their own that teachers can best help students develop the tools they need to * Gather, organize, and make sense of information, * Become cognitively engaged and internally motivated to achieve, and * Experience learning as a dynamic process of creating and changing. Suggestions for using these techniques in daily classroom practice, advice on lesson planning for cognitive engagement, and guidelines for conducting reflective research expand this book's practical applications. Use it not only to help struggling students break through hidden barriers but to empower all students with tools that will last a lifetime.

By establishing a conceptual framework and a common language for educators to work together, this volume attempts to answer the challenge facing all teachers -- how can students improve the quality of their thinking? Methods of strengthening the thought process include: helping students learn to monitor their attention and commitments; asking questions that require students to organize, analyze, and integrate information; setting tasks that involve complex processes such as problem solving and research; and modeling and reinforcing fair-mindedness.

This volume explores and enhances our understanding of how stress and well-being at work can change over time.

Master's Thesis from the year 2016 in the subject Pedagogy - Higher Education, , course: Education Leadership, language: English, abstract: This study intends to re-conceptualize a pedagogical approach to respond to students that are cognitively inactive in the classroom of higher education. The background of the thesis is set up on the ground of academic professional culture of pedagogical practice in the higher education. It has analyzed the intersecting positions of cognition and pedagogy. Following a multi-paradigmatic approach to the thesis process, multidisciplinary theoretical perspectives have been used to interpret the cognitions situated in the classroom students. These perspectives allow to hold up a compatible research design, qualitative sounding and quantitative silence design and a non-positional position role of researcher. Analytic auto-ethnography was employed as a major method followed by other methods and tools like participant observation, interviews and group discussions, open- ended questionnaires and unobtrusive measures. Activating the meta-cognition of the research participants, the reflective understandings have been drawn from their individually situated cognition. The vignettes, student-composed texts and student and teacher-expressed opinions are the evidences and the data collected from the field. Crystallization of them by interfacing the theories reveals cognitive multiplicities (cognitive process, cognitive style, content schemata and thought system) in the students of higher education. This paper looks for answers to several research questions: Why are the cognitions of every student not activated in the classroom? Have the present pedagogical practices activated every student's cognition in the classroom? Are the students in the classroom of higher education individually different in terms of cognition? Are there specific cognitive diversities in the students of the classroom? What are the current pedagogical practices in classrooms of higher education? What cognitive styles do the students possess in a classroom of higher education? How do the pedagogical practices of teachers/instructors respond the cognitive processes of the students? What is the pedagogical design/model to address the cognitive complexity/diversity of a classroom of higher education/teacher education?

This volume brings together recent research and commentary in secondary school mathematics from a breadth of contemporary Canadian and International researchers and educators. It is both representative of mathematics education generally, as well as unique to the particular geography and culture of Canada. The chapters address topics of broad applicability such as technology in learning mathematics, recent interest in social justice contexts in the learning of mathematics, as well as Indigenous education. The voices of classroom practitioners, the group ultimately responsible for implementing this new vision of mathematics teaching and learning, are not forgotten. Each section includes a chapter written by a classroom teacher, making this volume unique in its approach. We have much to learn from one another, and this volume takes the stance that the development of a united vision, supported by both research and professional dialog, provides the first step.

This book is the second of two volumes devoted to the work of Theo Kuipers, a leading Dutch philosopher of science. Philosophers and scientists from all over the world, thirty seven in all, comment on Kuipers' philosophy, and each of their commentaries is followed by a reply from Kuipers. The present volume is devoted to Kuipers' neo-classical philosophy of science, as laid down in his Structures in Science (Kluwer, 2001). Kuipers defends a dialectical interaction between science and philosophy in that he views philosophy of science as a meta-science which formulates cognitive structures that provide heuristic patterns for actual scientific research, including design research. In addition, Kuipers pays considerable attention to the computational approaches to philosophy of science as well as to the ethics of doing research. Thomas Nickles, David Atkinson, Jean-Paul van Bendegem, Maarten Franssen, Anne Ruth Mackor, Arno Wouters, Erik Weber & Helena de Preester, Eric Scerri, Adam Grobler & Andrzej Wisniewski, Alexander van den Bosch, Gerard Vreeswijk, Jaap Kamps, Paul Thagard, Emma Ruttkamp, Robert Causey, Henk Zandvoort comment on these ideas of Kuipers, and many present their own account. The present book also contains a synopsis of Structures in Science. It can be read independently of the first volume of Essays in Debate with Theo Kuipers, which is devoted to Kuipers' From Instrumentalism to Constructive Realism (2000).

International Academic Conference on Education, Teaching and Learning in Prague 2017 and International Academic Conference on Management, Marketing and Economics in Prague 2017 and International Academic Conference on Transport, Tourism and Sport Science in Prague 2017

For decades we have witnessed the emergence of a media age of illusion that is based on the principles of physics—the multidimensionality, immateriality, and non-locality of the unified field of energy and information—as a virtual reality. As a result, a new paradigm shift has reframed the cognitive unconscious of individuals and collectives and generated a worldview in which mediated illusion prevails. Exploring the Collective Unconscious in a Digital Age investigates the cognitive significance of an altered mediated reality that appears to have all the dimensions of a dreamscape. This book presents the idea that if the digital media-sphere proves to be structurally and functionally analogous to a dreamscape, the Collective Unconscious researched by Carl Jung and the Cognitive Unconscious researched by George Lakoff are susceptible to research according to the parameters of hard science. This pivotal research-based publication is ideally designed for use by psychologists, theorists, researchers, and graduate-level students studying human cognition and the influence of the digital media revolution.

Designed to present some of the current research on student motivation, cognition, and learning, this book serves as a festschrift for Wilbert J. McKeachie who has been a leading figure in college teaching and learning. The contributions to this volume were written by former students, colleagues and friends. A common focus on a general or social cognitive view of learning is shared throughout the volume, but there are significant differences in the perspectives the researchers bring to bear on the issues. They provide an excellent cross-section of current thinking and research on general cognitive topics such as students' knowledge structures, cognitive and self-regulated learning strategies, as well as reasoning, problem solving, and critical thinking. Social cognitive and motivational topics are also well represented, including self-worth theory and expectancy-value models. More importantly, an explicit attempt is made to link cognitive and motivational constructs theoretically and empirically. This area of research is one of the most important and promising areas of future research in educational psychology. Finally, most of the chapters address instructional implications, but several explicitly discuss instructional issues related to the improvement of college students' motivation and cognition.

During the past two or three decades, research in cognitive science and psychology has yielded an improved understanding of the fundamental psychological nature of knowledge and cognitive skills that psychological testing attempts to measure. These theories have reached sufficient maturity, making it reasonable to look upon them to provide a sound theoretical foundation for assessment, particulary for the content of assessments. This fact, combined with much discontentedness over current testing practices, has inspired efforts to bring testing and cognitive theory together to create a new theoretical framework for psychological testing -- a framework developed for diagnosing learners' differences rather than for ranking learners based on their differences. This volume presents some initial accomplishments in the effort to bring testing and cognitive theory together. Contributors originate from both of the relevant research communities -- cognitive research and psychometric theory. Some represent collaborations between representatives of the two communities; others are efforts to reach out in the direction of the other community. Taking fundamentally different forms, psychometric test theory assumes that knowledge can be represented in terms of one or at most a few dimensions, whereas modern cognitive theory typically represents knowledge in networks -- either networks of conceptual relationships or the transition networks of production systems. Cognitively diagnostic assessment is a new enterprise and it is evident that many challenging problems remain to be addressed. Still, it is already possible to develop highly productive interactions between assessment and instruction in both automated tutoring systems and more conventional classrooms. The editors hope that the chapters presented here show how the reform of assessment can take a rigorous path.

The contributions to this volume focus on what language and language use reveals about cognitive structure and underlying cognitive categories. Wide-ranging and thought-provoking essays from linguists and psychologists within this volume investigate the insights conceptual categorization can give into the organization and structure of the mind and specific mental states. Topics and linguistic phenomena discussed include narratives and story telling, language development, figurative language, linguistic categorization, linguistic relativity, and the linguistic coding of mental states such as perceptions and beliefs. With contributions at the forefront of current debate, this book will appeal to anyone with an interest in language and the cognitive structures that support it.

Research in science education is now an international activity. This book asks for the first time, Does this research activity have an identity? -It uses the significant studies of more than 75 researchers in 15

countries to see to what extent they provide evidence for an identity as a distinctive field of research. -It considers trends in the research over time, and looks particularly at what progression in the research entails. -It provides insight into how researchers influence each other and how involvement in research affects the being of the researcher as a person. -It addresses the relation between research and practice in a manner that sees teaching and learning in the science classroom as interdependent with national policies and curriculum traditions about science. It gives graduate students and other early researchers an unusual overview of their research area as a whole. Established researchers will be interested in, and challenged by, the identity the author ascribes to the research and by the plea he makes for the science content itself to be seen as problematic.

This edited volume brings together a select group of leading organizational scholars for the purpose of developing a foundation-setting book on positive relationships at work. Positive Relationships at Work (PRW) is a rich new interdisciplinary domain of inquiry that focuses on the generative processes, relational mechanisms and outcomes associated with positive relationships between people at work. This volume builds a solid foundation for this promising new area of scholarly inquiry and offers a multidisciplinary exploration of how relationships at work become a source of growth, vitality, learning and generative states of human and collective flourishing. A unique feature of the book is the use of a connecting commentator chapter at the end of each section. The Commentator Chapters, written by preeminent scholars, uncover and discuss integrative themes that emerge within sections. The editors approach the topic from multiple levels, each level providing critical, valuable insights into the dynamic process underlying positive relationships at work. These levels are arranged in five parts: an introduction to positive relationships at work; Individuals and Dyads; Groups and Communities; Organizations and Organizing; and a conclusion that offers an engaging invitation and multi-level map for guiding future research. This volume will appeal to academics and practitioners, as well as scholars and graduate students in organizational psychology, management, human resources, and inter-personal communications.

This collection of original contributions by leading researchers celebrates the 1996 centenary of the births of the two most seminal figures in education and developmental psychology - Jean Piaget and Lev Vygotsky. Research in their footsteps continues worldwide and is growing. What are the implications for the future for this extensive programme? Which of the large body of findings has proved most important to current research? Based around five themes, these original contributions cover educational intervention and teaching, social collaboration and learning, cognitive skills and domains, the measurement of development and the development of modal understanding.

"This handbook investigates a variety of ePortfolio uses through case studies, the technology that supports the case studies, and it also explains the conceptual thinking behind current uses as well as potential uses"--Provided by publisher.

Examining in detail the work of consecration carried out by elite education systems, Bourdieu analyzes the distinctive forms of power—political, intellectual, bureaucratic, and economic—by means of which contemporary societies are governed.

Spatial cognition is a broad field of inquiry, emerging from a wide range of disciplines, and incorporating a wide variety of paradigms that have been employed with human and animal subjects. The contributing authors in both volumes of this Handbook are highly respected international authorities in their fields, with many years of experience, who describe and review the major paradigms used in their research area. Volume1 is concerned with the developing infant, child, and adult, and their use of spatial representations to search among multiple spatial locations, make spatial judgments, and find their way from place to place in laboratory environments, built environments and in virtual reality simulations.

First published in 1989. Routledge is an imprint of Taylor & Francis, an informa company.

Empowering Science and Mathematics for Global CompetitivenessProceedings of the Science and Mathematics International Conference (SMIC 2018), November 2-4, 2018, Jakarta, IndonesiaCRC Press

The modern knowledge-based economic model demands highly qualified specialists who are capable of solving complex problems and seeing relationships between phenomena, events, and objects. This book highlights the development of the structural knowledge of university students as a necessary precondition for preparing labour market experts, as it facilitates significant cognitive processes, effective problem solving and expert-level performance. The volume considers structural knowledge as an object that should be regularly assessed and further developed in the formative assessment process by using concept mapping as an assessment instrument. It describes concept mapping, the theoretical foundations of structural knowledge, and its formative assessment, and provides a set of practical scenarios validated in instructional practice. It is intended primarily for the administrative and educational staff of higher education institutions who wish to improve the quality of education with the aim of bringing students' structural knowledge closer to experts' knowledge, and thus ensuring better preparation of students for their professional activities.

This is hardly another field in education which is more important for a country's future than science education. Yet more and more students elect to concentrate on other fields to the exclusion of science for a variety of reasons: 1. The perception of degree of difficulty, 2. The actual degree of difficulty, 3. The lack of perceived prestige and earnings associated with the field. 4. The dearth of good and easy to use texts. 5. The lack of society in comprehending the significance of science and creating attractive incentives for those who enter the field. This book presents new issues and challenges for the field.

Globally, mathematics and science education faces three crucial challenges: an increasing need for mathematics and science graduates; a declining enrolment of school graduates into university studies in these disciplines; and the varying quality of school teaching in these areas. Alongside these challenges, internationally more and more non-specialists are teaching mathematics and science at both primary and secondary levels, and research evidence has revealed how gaps and limitations in teachers' content understandings can lead to classroom practices that present barriers to students' learning. This book addresses these issues by investigating how teachers' content knowledge interacts with their pedagogies across diverse contexts and perspectives. This knowledge-practice nexus is examined across mathematics and science teaching, traversing schooling phases and countries, with an emphasis on contexts of disadvantage. These features push the boundaries of research into teachers' content knowledge. The book's combination of mathematics and science enriches each discipline for the reader, and contributes to our understandings of student attainment by examining the nature of specialised content knowledge needed for competent teaching within and across the two domains. Exploring Mathematics and Science Teachers' Knowledge will be key reading for researchers, doctoral students and postgraduates with a focus on Mathematics, Science and teacher knowledge research.

There are two common purposes in educational evaluation which are, at times, in conflict with one another. Educational institutions usually require evaluation data to demonstrate effectiveness to funders and other stakeholders, and to provide a measure of performance for marketing purposes. Educational evaluation is also a professional activity that individual educators need to undertake if they intend to continuously review and enhance the learning they are endeavouring to facilitate. This book presents new research on issues of vital importance to this field.

This volume supports the belief that a revised and advanced science education can emerge from the convergence and synthesis of several current scientific and technological activities including examples of research from cognitive science, social science, and other discipline-based educational studies. The anticipated result: the formation of science education as an integrated discipline.

Cognitive Developmental Change makes a fascinating contribution to the fields of developmental, cognitive and educational science by bringing together a uniquely diverse range of perspectives for analysing the dynamics of change. Connecting traditional Piagetian, information processing, and psychometric approaches with newer frameworks for the analysis of developmental change it provides the reader with an account of the latest theory and research at the time of publication. The contributors to the volume, all internationally respected experts, were asked when writing to consider three main aspects of cognitive change. Its object (what changes in the mind during development), its nature (how does change occur?) and its causes (why does change occur? Or, what are the internal and external factors responsible for cognitive change?). As a result chapters cover key theories of cognitive change, the factors that affect change including neurological, emotional and socio-cultural factors and methods for measuring and modelling change.

Mountaineers, Rock Climbers, and Science Educators Around the 1920s, rock climbing separated from mountaineering to become a separate sport. At that time European climbers developed new equipment and techniques, enabling them to ascend mountain faces and to climb rocks, which were considered unassailable up to that time. American climbers went further by expanding and improving on the equipment. They even developed a system of quantification where points were given for the degree of difficulty of an ascent. This system focused primarily on the pitch of the mountain, and it even calculated up to de- mals to give a high degree of quantification. Rock climbing became a technical system. Csikszentmihaly (1976) observed that the sole interest of rock climbers at that time was to climb the rock. Rock climbers were known to reach the top and not even glance around at the scenery. The focus was on reaching the top of the rock. In contrast, mountaineers saw the whole mountain as a single “unit of perc- tion. ” “The ascent (to them) is a gestalt including the aesthetic, historical, personal and physical sensations” (Csikszentmihaly, 1976, p. 486). This is an example of two contrasting approaches to the same kind of landscape and of two different groups of people. Interestingly, in the US, Europe, and Japan a large segment of the early rock climbers were young mathematicians and theoretical physicists, while the mountaineers were a more varied lot.

Curiosity and Exploration: Theories and Results provides a systematic review of research on curiosity and exploration and is intended to present theories, methods, and research findings and to compare these with other fields of psychology. The text discusses topics on various aspects of curiosity and exploration such as the historical development of curiosity research; theoretical approaches to fully explain the phenomena of curiosity and exploration; developmental perspective in the study of curiosity and exploration; and the author's summary and evaluation at the end of the book. Psychologists will find the book to be very interesting.

Geographic Information Science and Technology (GISc&T) has been at the forefront of education innovation in geography and allied sciences for two decades. Teaching Geographic Information Science and Technology in Higher Education is an invaluable reference for educators and researchers working in GISc&T, providing coverage of the latest innovations in the field and discussion of what the future holds for GI Science education in the years to come. This book clearly documents teaching innovations and takes stock of lessons learned from experience in the discipline. The content will be of interest both to educators and researchers working in GISc&T, and to educators in other related fields. More importantly, this book also anticipates some of the opportunities and challenges in GI Science and Technology education that may arise in the next decade. As such it will be of interest to chairs, deans, administrators, faculty in other subfields, and educators in general. Innovative book taking a look at recent innovations and teaching developments in the course provision of GI Science and Technology in higher education. Edited by leaders in the field of GISc&T who have been at the forefront of education innovation in GI Science and allied science subjects. Provides coverage of GISc & Technology in a range of institutional settings from an international perspective at all levels of higher education. An invaluable text for all educators within the field of GISc&T and allied subjects with advice from experts in the field on best practice. Includes coverage and practical advice on curriculum design, teaching with GIS technology, distance and eLearning with global examples from leading academics in the field.

Based on a selection of the most relevant and high quality research papers from the 2010 Networked Learning Conference, this book is an indispensible resource for all researchers, instructional designers, program managers, and learning technologists interested in the area of Technology Enhanced Learning. The book was an important catalyst for the Springer “Research in Networked Learning” Book Series edited by Vivien Hodgson and David McConnell. Details of the “Research in Networked Learning” Book Series and current titles can be found at http://www.springer.com/series/11810 This volume provides information on current trends and advances in research on networked learning, technology enhanced learning, and e-learning. Specifically, it provides cutting edge information in the areas of: Designing and Facilitating Learning in a Networked World Methodologies for Research in Networked Learning Learning in Social Networks Embedding Networked Learning in Public and Private Organizations Problem based Networked Learning Globalization and Multiculturalism in Networked Learning Networked Learning and International Development Participation and Alienation in Networked Learning

The demand for higher education worldwide is booming. Governments want well-educated citizens and knowledge workers but are scrambling for funds. The capacity of the

public sector to provide increased and equitable access to higher education is seriously challenged.
Reflective Teaching in Further, Adult and Vocational Education is the definitive textbook for reflective professionals in further, adult and vocational education, drawing on the experience of the author team and the latest research, including that of the Teaching and Learning Research Programme (TLRP) findings. It offers extensive support for trainee and practising teachers in further, adult and vocational settings, for both practice-based training and career-long professionalism. Now in its fourth edition, written by a collaborative author team of further, adult and vocational education experts led by Yvonne Hillier and Margaret Gregson, Reflective Teaching in Further, Adult and Vocational Education offers two levels of support: - practical guidance for practitioner success with a focus on the key issues including individual and collaborative approaches to reflective practice, a systematic approach to educational improvement based upon Joint Practice Development; and - evidence-informed 'principles' to aid understanding of how theories can effectively inform teaching practices and offer ways to develop deeper understanding of effective practices. The new edition is also enhanced by improved navigation and updated pedagogical features, including a revised chapter structure and text design, all-new case studies, activities, figures and diagrams. The team includes: Margaret Gregson (University of Sunderland, UK) | Yvonne Hillier (University of Brighton, UK) | Gert Biesta (University of Luxembourg, Luxembourg) | Sam Duncan (Institute of Education, University College London, UK) | Lawrence Nixon (University of Sunderland, UK) | Trish Spedding (University of Sunderland, UK) | Paul Wakeling (Havering Sixth Form College, UK) Reflective Teaching in Further, Adult and Vocational Education directly compliments and extends the chapters of this book. It has been designed to provide convenient access to key texts, working as a compact and portable library. The associated website, www.reflectiveteaching.co.uk offers supplementary resources including reflective activities, research briefings and advice on further readings. It also features a glossary of educational terms, links to useful websites and showcases examples of excellent research and practice. This book forms part of the Reflective Teaching series, edited by Andrew Pollard and Amy Pollard, offering support for reflective practice in early, primary, secondary, further, vocational, university and adult sectors of education.